Quinoa Experimentation and Production in the Mediterranean Region

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Session Spanning the Globe I

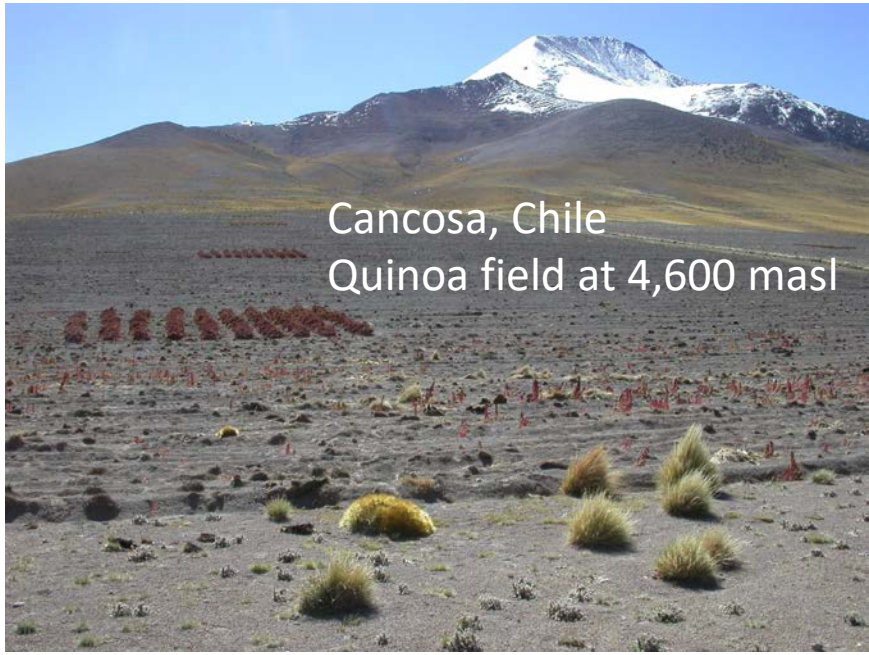
Some background elements

- Biodiversity conservation is a key global concern of the international community today (IPBES, IPCC).
- In Latin America, the Andean highlands ecosystem is one of the center of origin or "hot-spot" of the world's biodiversity.
- For thousands of years, populations have been interacting with local plants building specific agroecosystems, that are pathways for evolutionary processes.

- *Chenopodium quinoa* Willd. has evolved from a complex process of biological, geographical, climatic, social and cultural interactions that have determined its current very high genetic diversity.

Quinoa, an Andean crop

- Domesticated 7000 years ago
- Rejected during the Spanish conquest
- Rediscovered during the 20th century
- Many new producers outside the Andes
- Genetic resources for adaptation



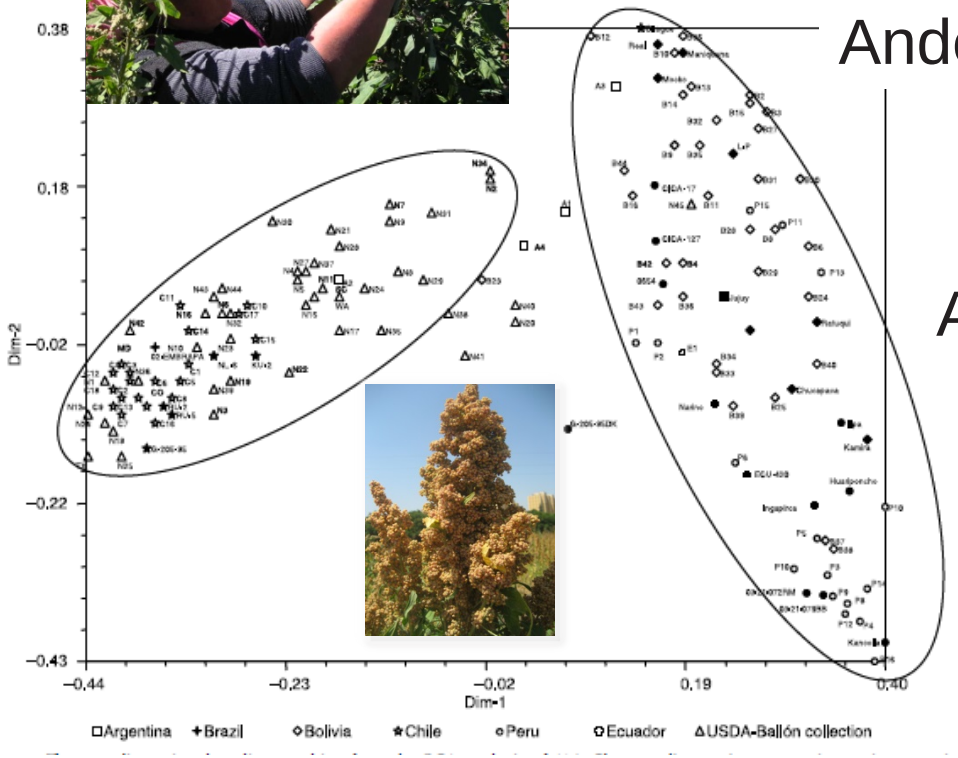
Quinoa's Resilience, thanks to high genetic diversity

A single domesticated species but ***five major ecotypes*** :

- Quinoa from the Highlands (Peru y Bolivia)
- Quinoa from Inter Andean Valleys (Colombia, Ecuador y Peru)
- Quinoa from the Yungas (Bolivia)
- Quinoa from Salares (Bolivia, Chile
- y Argentina)
- Quinoa from Sea level (Chile)

From the Andes to the world

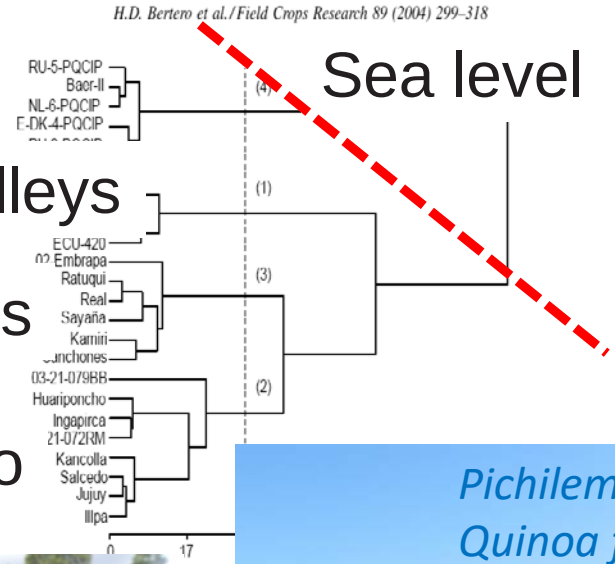
Lumako, South Chile
Quinoa at 700 masl



Andean Valleys

Salares

Altiplano



Pichilemu, Central Chile
Quinoa field at 50 masl

Christensen et al. 2007. Plant Genet. Res.
Bertero et al, 2004. Field Crop Research

Quinoa Genetic Resources Distribution and Access

Canada
United-States of America
Sweden
United Kingdom
Germany
Czech Republic
Austria
Slovaquia
Hungary
Portugal
Spain
Japan
India
Ethiopia
Kenya
South Africa
Australia
Colombia
Ecuador
Peru
Brazil
Bolivia
Uruguay
Chile
Argentina

Number of accessions in the ex-situ collections located in the Andean countries:

10 000
5 000
1 000
100

ex-situ collections out of the Andean countries

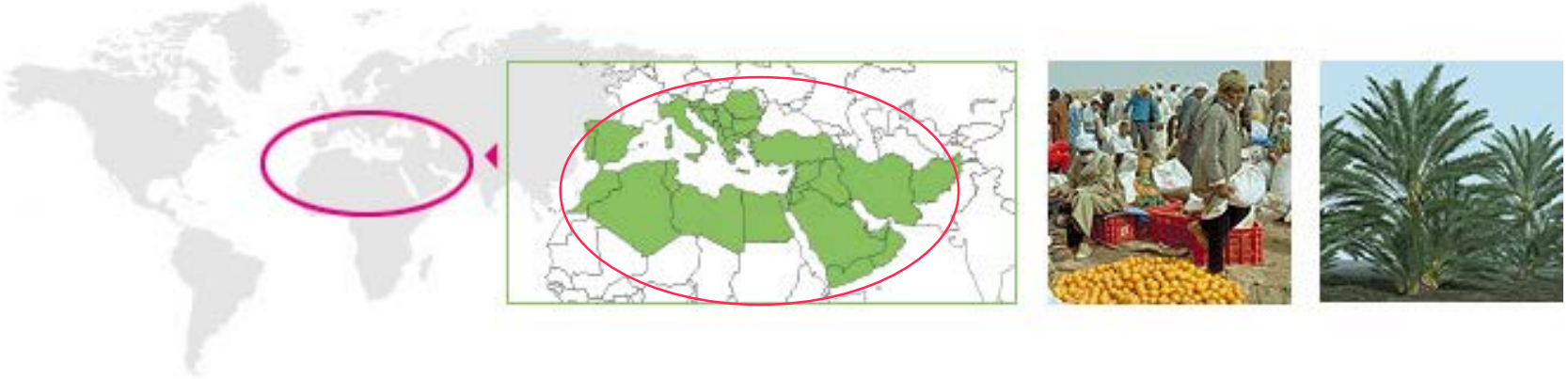
0 1 500 3 000 Miles

Dr. D. BAZILE (CIRAD)

In 2020, Quinoa is present in more than 125 countries

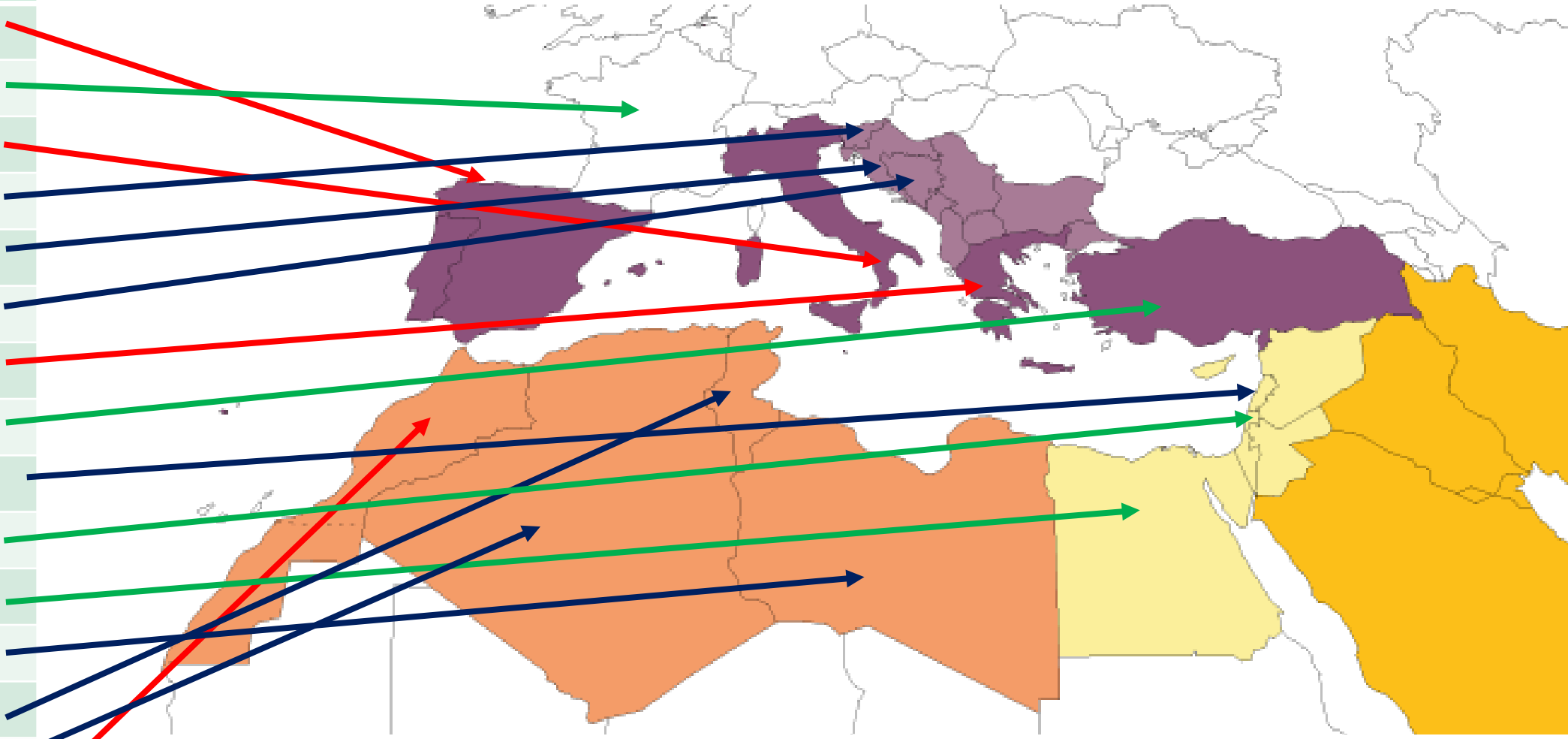
2014 was the year of the great step for quinoa in its worldwide expansion.

Arrival of quinoa in the Mediterranean



Different waves of Experimentation, and then Production

PAYS	Année
Spain	1992
France	2009
Italy	1999
Slovenia	2018
Croatia	2014
B-Herzegovina	2014
Greece	1995
Turkey	2008
Lebanon	2014
Israel	2005
Egypt	2008
Libya	2013
Tunisia	2013
Algeria	2013
Morocco	1999



Why a strong interest for quinoa in the Mediterranean?

FOR

- Helping to combat malnutrition & Contributing to poverty reduction

WHY

- Super nutritious food: EAA and gluten free, minerals, vitamins, fiber, fat

HOW

- Altitude & Temperatures
- Drought tolerant & Resistant to soil salinity

BUT…

From crop adaptation to markets

- Successful adaptation in many contrasting environments
- Lack of knowledge of quinoa by local populations
- Washing of quinoa and its processing for human consumption

Morocco

France

Turkey

To train both farmers and extension services

- On agronomic production aspects but also on post-harvest activities
- But also on socio-economical issues and marketing considerations



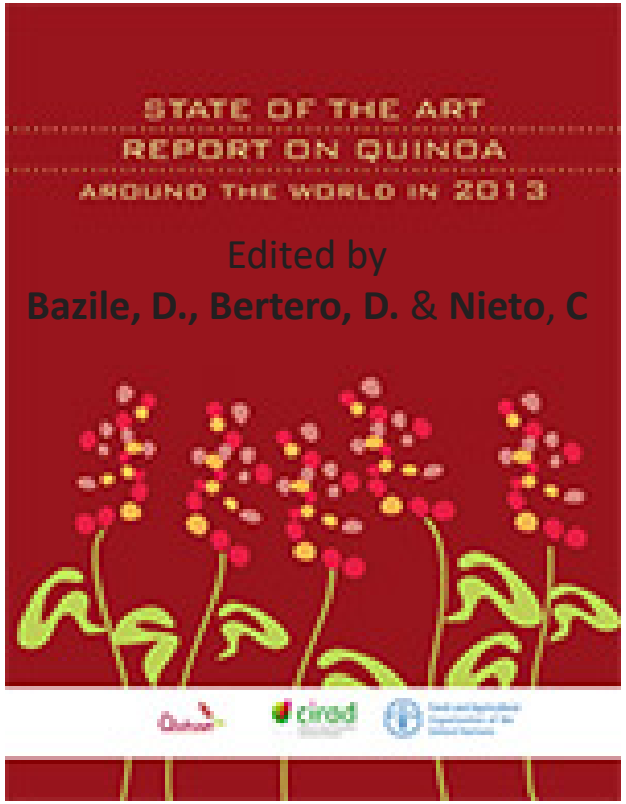



Quinoa, a model-crop for transformative changes

Quinoa's biodiversity & …

- Adaptive crop for marginal environments
- Agroecological practices
- Nutrition-Sensitive agriculture
- Incomes for small-scale farmers
- Farmers maintain agrobiodiversity for global changes adaptation

ANDES ⇔ WORLD



Some Key messages for Concluding

- Access to quinoa germplasm and benefit sharing from its utilization should be addressed, recognizing the hard work of the Andean people in the selection and conservation of local quinoa landraces,
- maintaining and adding value to quinoa's biodiversity through diversification for the benefit of global food security and poverty reduction.
- Quinoa is more that only a crop: its biodiversity is at the heart on an innovative agri-food system that can really inspire for its spreading.

Thank You!

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